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out sufficient reason, as it appears to us) as the variety *kansensis*. *Lycoperdon rubro-flavum*, *L. sigillatum*, *L. rima-spinosum*, *L. tabacinum* (the last by J. B. Ellis) and *Geaster turbinatus* are other new species of Gasteromycetes. Lists of ferns, mosses, lichens, algæ and parasitic fungi complete this very interesting bulletin. —Part II of the Catalogue of Canadian Plants, by John Macoun, is a thick pamphlet of about 200 pages, devoted to the Gamopetalæ. Curiously the number of species in this part (908) is almost exactly the same as in the previous one, viz., 907. There is a great deal of exceedingly valuable information given upon the geographical range of species, and also much in the way of notes upon habitats. —Dr. Gray's memorial of George Bentham in the *American Journal of Science* for February, contains one of the fullest accounts of the very full life of the venerable botanist, whose death the world still mourns. "His life was a perfect and precious example, much needed in this age, of persevering and thorough devotion to science while unconstrained as well as untrammelled by professional duty or necessity. For those endowed with leisure, to 'live laborious days' in her service, is not a common achievement." —Nos. 1 and 2 of the *Journal of Mycology* have been received, and we can only say at this time that the matter is, in the main, good, but that the editor has not yet succeeded in getting from his printers as good work as is desirable. This, however, will doubtless be improved in the future.

ENTOMOLOGY.

GENERIC POSITION OF *POLYDESMUS OCELLATUS*.—In a letter to Professor Packard the undersigned writes as follows :

In the AMERICAN NATURALIST, April, 1883, you have published a paper on "a new species of *Polydesmus* with eyes," which you have called *Polydesmus ocellatus*. As can be seen from your description given there, the new myriopod must be a species of the genus *Craspedosoma* Leach (Transac. Linn. Society, Vol. XI, p. 380, printed 1815), and not of the genus *Polydesmus* Latr.; for the latter genus is always characterized by the want of eyes and by the number of segments being twenty, whereas the former genus is characterized by oculi composed by multiseriated ocelli and by the number of segments being thirty or, in younger specimens, less, from twenty-seven to twenty-nine.

In consequence of the necessity of ranging your species in another genus, all the members of which are provided with eyes, the specific name *ocellatus* should be removed and another introduced instead of it. I propose the name *Craspedosoma packardii*.

As I have reason to suppose, you are probably not in possession of Dr. Fr. Meinert's paper on the Chilognatha of Denmark (Danmark's Chilognather, published 1868 in the Naturhistorisk Tidsskrift, 3 Række [= series], 5th Vol.), where the genera *Poly-*

desmus and *Craspedosoma* are very well defined. The characteristics given by that excellent author are, in extenso, as follows:

"*Polydesmus*.—Mandibulæ pectinibus senis, pro dente molari lobo fimbriato instructæ. Lamina labialis maxima, tertiam partem stipitum labialium et maxillarium sejungens. Stili linguales bidentes. Oculi nulli. Antennæ articulo penultimo brevior quam primo; tertio longissimo, longior quam sexto. Stigmata odorifera in segmento 5, 7, 9, 10, 11, 13, 15–19 sita. Segmenta strictura transversa partita; pars posterior lateribus valde explanata. Segmentum 2–4 singulo pare, cetera segmenta binis paribus pedum instructa; numerus segmentorum 20. Sterna duo prima libera; cetera per paria inter se et cum segmentis suis concreta. Segmentum secundum et tertium infra clausa. Pedes omnes 6-articulati; articulus ultimus longissimus, longior quam tertius. Valvulæ anales valde convexæ. Corpus non contractile. Mas: Par prius pedum segmenti septimi in organa copulationis prominentia conformatum. Paria pedum 30. Femina: Paria pedum 31.

"*Craspedosoma*.—Mandibulæ pectinibus denis; dente molari magno. Lamina labialis magna, tertiam partem stipitum labialium modo sejungens. Stili linguales tridentes. Oculi ocellis multiserialis. Antennæ articulo penultimo longior quam primo; tertio longissimo, longior quam quinto. Stigmata odorifera nulla. Segmenta strictura transversa partita; pars posterior plus vel minus dilatata. Segmentum secundum, tertium ultimumque pediferum singulo pare. cetera segmenta binis paribus pedum instructa; numerus segmentorum 30 vel minor. Sterna omnia libera. Pedes primi et secundi paris 6-articulati, ceteri 7-articulati; articulus pedum quartus longissimus, longior quam ultimus. Valvulæ anales angulatim convexæ. Corpus in turbinem vel spiram contractile. Mas: Segmentum sextum leviter, septimum valde efflatum. Utrumque par pedum segmenti septimi in organa copulationis oblecta conformatum. Paria pedum 48 vel pauciora. Pedes, paribus primo, secundo ultimisque exceptis, articulo ultimo dense pulvillato. Femina: Paria pedum 50 vel pauciora."

If you should wish, for comparison, specimens of the Swedish *Craspedosoma rawlinsii* Leach, I request the honor of receiving your orders, and immediately some individuals will be sent to you.—*Dr. Anton Stuxberg, director of the Zool. Mus. of Gothenburg, Sweden.*

[We have delayed publishing this note hoping to receive the specimens of *Craspedosoma*, in order to ascertain whether we have made a mistake in referring the myriopod to *Polydesmus*, but thus far it has not been received.—*A. S. P.*]

AQUATIC CATERPILLARS.—*Apropos* of our article on the habits of the aquatic caterpillar of *Hydrocampa* in the *NATURALIST* for August last, we copy the following account of one of the same group of Pyralids from the *Journal of the Royal Microscopical Society* for December:

W. Müller-Blumenau has examined *Cataclysta pyropalis*, the larvæ of which live in water, but do not resemble the only known example, *Paraponyx stratiolata*, in the same way of breathing by gills. The larva, which is 1.4^{cm} long, has a flattened body, attenuated posteriorly. The gills are in the form of unbranched tubular appendages of the second and third thoracic and of all the abdominal segments; they are arranged in an upper and a lower group; the number of gills varies somewhat. The stigmata of the tracheal system are, as a rule, all closed, but are easily to be dis-

tinguished by a black oval dot; just as in other larvæ with tracheal gills, as described by Palmén, the stigmatic branches are completely closed. The larvæ are ordinarily found attached to stones, and are rather more frequent in stagnant than in running water. They form for themselves a chamber with delicate but closely spun walls, and they do not leave this, as a rule, until they attain to the imaginal state. The spaces at the edge of the cocoon only serve as a means of exit for the fæces; they live on the diatoms and other cellular Algæ which grow on the stones to which they attach themselves. They almost always fix themselves by their backs to the stones, and in correlation with this we observe that they present the remarkable condition of having their dorsal surface pale, and their ventral dark. This is not however, to be regarded as a protective adaptation, but as the result of an earlier condition in which the whole of the larva was darkly pigmented; the paleness of the back is due to the want of light.

After an account of the pupa and of the homes in which it dwells, the author passes to some other species of the same genus, all of which are Brazilian. These are much less common, and their specific characters are not yet fully worked out, but there are probably five species. The gills, which are always unbranched, never attain to the relative length seen in *C. pyropalis*, but they are always more numerous. The covering of the pupa contains air-spaces in its outer division, which are connected with that of the inner, but as the stones or algæ forbid any exchange of gas with the exterior, this can only be effected by the spaces in which the water is able to pass; this explains how it is that we sometimes find the air-chambers on the side of the house which is attached to the stone.

ORGANS OF HEARING AND SMELL IN SPIDERS.—F. Dahl proposes to classify spiders according to the character and disposition of the auditory hairs on the limbs of these animals, as follows:

1. Tibia with two series of auditory hairs, metatarsus with one hair, and tarsus with a rudimentary pit or depression free from hairs, *e. g.* Epeiridæ, Uloboridæ, Theridiidæ, and Pholeidæ.

2. Tarsus with no rudimentary depression for auditory hairs, usually bearing a number of hairs like the metatarsus and tibia, *e. g.* Territelariæ, Dysderidæ.

The remaining number of this class are further subdivided according to the presence of one or two series of auditory hairs on the tarsus. A single series is characteristic of Amaurobiidæ, Agalenidæ, Philodromidæ, Thomisidæ, and Attidæ. Two series occur in Drassidæ, Anyphoenidæ and Lycosidæ.

Dahl has satisfied himself that these auditory organs can appreciate not only sound, but also variations of atmospheric pressure, such as winds.

An olfactory organ is stated to exist on the maxillæ. On the surface in front of which the mandibles work to and fro is a soft

flat track, of a sieve-like appearance, beneath which occur a number of long, polygonal processes, apparently fused, but in reality separate, which are in connection basally with a stout nerve-filament. Rather by a process of exhaustion than from direct evidence as to their function, Dahl affirms that this organ is olfactory in nature. It is universally found in the Arachnida, though in different stages of development, being most fully developed in Pachygnatha.—*Journ. Roy. Microscopical Society, Dec.*

IGNIVOROUS ANT.—G. Rafin described a species of ant which he has observed in the Island of St. Thomas, and which he proposes to call *Formica ignivora*. A large fire of wood having been kindled at a certain distance from the ant-hill, he is able to affirm that the ants precipitated themselves into it by thousands, until it was completely extinguished.—*Journ. Roy. Microscopical Society, Dec., 1882.*

ENTOMOLOGICAL NOTES.—In a paper on the larvæ and larval cases of some Australian Aphrophoridae, F. Ratte describes those of a species probably of *Ptyelus*, which are true shells, containing at least three-fourths of carbonate of lime, and resembling in shape some fossil and recent serpulæ, some being conical, others serpuliform or helicoidal. The conical shells are fixed on the branches of some species of *Eucalyptus*, the mouth turned upwards, the larva being placed in it with the head downwards.—In his notes on the flight of insects, Dr. v. Lendenfeld contests the views of the French physiologists that the position and movements of the wings of insects are merely the results of the mechanical influence of the resisting air, and gives instances where muscular contraction had been clearly proved.—Dr. S. W. Williston begins, in the Bulletin of the Brooklyn Entomological Society for February, a series of papers on the classification of North American Diptera. The first paper is extracted from a monograph of the North American Syrphidae, now ready for the press, and which gives the results of a careful study of nearly 275 species of this family.—The committee on a union of *Papilio* with the *Bulletin* have reported in favor of it, and recommend that a monthly journal be issued under the name of *Entomologica Americana*, at \$2 a year.—An entomological society has been established at Newark, N. J.—In an examination of over 1500 specimens, Mr. C. H. T. Townsend found 115.3 males to every 100 females (*Can. Ent.*, Dec., 1884).—Mr. W. H. Edwards recounts, in the *Canadian Entomologist* for December, further experiments upon the effects of cold applied to chrysalids of butterflies.—*Nature* for Jan. 29, gives good figures and descriptions of the two fossil scorpions from the Silurian of Sweden and Scotland lately discovered.—A writer in the same number claims that the leaf-eating ant has something to do with the barrenness of the pampas of the La Plata, as they defoliate *Eucalyptus* plantations, cutting off the first leaves.